

CLAIMS

1. Method to generate a pseudo-random sequence (PRMS1) of multi-carrier data symbols (DMT0, DMT1, DMT2), said method comprising:

5 a. producing a pseudo-random bit sequence (PRBS1) by repetitively generating a pseudo-random sequence of L bits, L being a first integer value (L=4);

b. packetizing into multi-carrier data symbols (DMT0, DMT1, DMT2) thereby using N bits of said pseudo-random bit sequence (PRBS1) per
10 multi-carrier data symbol (DMT0, DMT1, DMT2), N being a second integer number (N=8), to thereby generate said pseudo-random sequence (PRMS1) of multi-carrier data symbols (DMT0, DMT1, DMT2),

CHARACTERIZED IN THAT said packetizing comprises:

b1. dividing said pseudo-random bit sequence (PRBS1) into strings
15 of N' bits, N' being a third integer value larger than N (N'=9); and

b2. using N bits out of each string of N' to generate a multi-carrier data symbol (DMT0, DMT1, DMT2) out of said pseudo-random sequence (PRMS1) of multi-carrier data symbols (DMT0, DMT1, DMT2), and leaving
20 N'-N bits out of each string of N' bits unused.

2. Generator (PR-GEN1) of a pseudo-random sequence (PRMS1) of multi-carrier data symbols (DMT0, DMT1, DMT2), said generator (PR-GEN1) comprising:

a. scrambling means (SCR1), adapted to repetitively generate a
25 pseudo-random sequence of L bits, L being a first integer value (L=4), to thereby produce a pseudo-random bit sequence (PRBS1);

b. packetizing means, adapted to packetize into multi-carrier data symbols (DMT0, DMT1, DMT2) using N bits of said pseudo-random bit sequence (PRBS1) per multi-carrier data symbol (DMT0, DMT1, DMT2), N
30 being a second integer number (N=8), to thereby generate said pseudo-

random sequence (PRMS1) of multi-carrier data symbols (DMT0, DMT1, DMT2),

CHARACTERIZED IN THAT said packetizing means comprises:

5 b1. dividing means (DIV1), adapted to divide said pseudo-random bit sequence (PRBS1) into strings of N' bits, N' being a third integer value larger than N ($N'=9$); and

b2. multi-carrier data symbol generating means (EMB1), adapted to use N bits out of each string of N' bits to generate a multi-carrier data symbol (DMT0, DMT1, DMT2) out of said pseudo-random sequence
10 (PRMS1) of multi-carrier data symbols (DMT0, DMT1, DMT2) and to leave $N'-N$ bits out of each string of N' bits unused.

3. Multi-carrier transmitter (MC-TX) comprising a pseudo-random sequence generator (PR-GEN1) as defined by claim 1, and further
15 comprising transmitting means (TX), coupled to said pseudo-random sequence generator (PR-GEN1), and adapted to transmit a pseudo-random sequence (PRMS1) of multi-carrier symbols (DMT0, DMT1, DMT2) generated by said pseudo-random sequence generator (PR-GEN1) over a communication channel (CHANNEL).

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4. Multi-carrier transmitter (MC-TX) according to claim 3,

CHARACTERIZED IN THAT said multi-carrier transmitter (MC-TX) further comprises selection means (SEL), adapted to select said third integer value N' , and communication means (COM) coupled to said
25 selection means (SEL), and adapted to communicate said third integer value N' to a multi-carrier receiver (MC-RX).

5. Multi-carrier transmitter (MC-TX) according to claim 4,

CHARACTERIZED IN THAT said selection means (SEL) is adapted
30 to select said third integer value N' so that N' differs from $L-1$, so that N' differs from $L+1$, and so that N' is not fractionally related to L .

6. Multi-carrier receiver (MC-RX) comprising a pseudo-random sequence generator (PR-GEN2) as defined by claim 1, and further comprising receiving means (RX) adapted to receive a first pseudo-random sequence (PRMS1') of multi-carrier symbols transmitted over a communication channel (CHANNEL), and decoding means (DECODER), coupled to said receiving means (RX) and to said pseudo-random sequence generator (PR-GEN2), and adapted to decode said first pseudo-random sequence (PRMS1') of multi-carrier symbols and a second pseudo-random sequence (PRMS2) of multi-carrier symbols generated by said pseudo-random sequence generator (PR-GEN2).